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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/892,476	06/28/2001	Joun Ho Lee	8733.481.00	3748

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EXAMINER

KIELIN, ERIK J

ART UNIT	PAPER NUMBER
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2813

DATE MAILED: 04/18/2003

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s) <i>Lee</i>	
	09/892,476	LEE ET AL.	
	Examiner	Art Unit	
	Erik Kielin	2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 4, 7, 9 and 16-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 8 and 10-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 June 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☒ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>3</u> . | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Election/Restrictions

1. Applicant's election of species I in Paper No. 8 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 4, 7, 9, and 16-20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim.

Priority

3. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Korea on 25 May 2001. It is noted, however, that applicant has not filed a certified copy of the 2001-28977 application as required by 35 U.S.C. 119(b).

Drawings

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: 9. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
5. The drawings are objected to because Figs. 3A and 3B fail to show that which Applicant indicates. The specification at paragraph [26] states that Figs. 3A and 3B show cross-sections of

Fig. 2B along the lines I-I' and II-II', respectively. As such, the overlap regions show data electrodes 27 overlap with the common line 25a --not the common electrode 25. (See also paragraph [17] which states that the common electrodes 25 extend from the common line 25a.)

6. Fig. 7 inaccurately depicts the cross-section along III-III' of Fig. 5. The right-hand side of Fig. 7 shows common electrode that does not exist in Fig. 5 along the cross-section indicated.

7. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 4-6, 12, and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 requires the data electrodes to be connected at the common line while claim 4 requires that the data lines be separated at the common line. It cannot be both.

Regarding claim 5, do the edge portions belong to the data electrode or the common line?

Regarding claim 6, it is unclear how an edge portion can depend upon a rubbing direction.

Regarding claims 12 and 15, it is unclear what "corresponds to" means with regard to the first portion of the transverse data electrode and the at least one corner portion of the vertex of

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the intersection of the common electrodes and the common lines. Additionally, it is unclear how “a” portion can correspond to more than one corner portion.

For the purposes of patentability, Examiner will interpret claims as best understood.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claims 1-3, 5, 6, 8, and 10 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6,281,958 B1 (**Nakajima**).

Nakajima discloses an in-plane switching mode LCD device (Title) comprising:

first 20 and second 21 substrates (col. 3, line 44; Fig. 2);

gate lines 39 (called “source line” in Nakajima) and data lines 31 defining a pixel region on the first substrate (Fig. 3);

a plurality of common 33 and data electrodes 40 (called “pixel electrodes” in Nakajima) formed to cross one another within the pixel region at constant intervals;

a common line 32 formed in parallel with the gate line 31, the common electrodes 33 being diverged from the common line 32;

a thin film transistor 38 formed in a crossing portion of the gate and data lines; and

a liquid crystal layer **16** (Fig. 2) formed between the first **20** and second **21** substrates, wherein the data electrodes **40** are connected with the thin film transistor at one side and the data electrodes overlap the common line at a minimum area so as not to affect electric field generated between the common electrodes and the data electrodes (col. 3, lines 58-62; section entitled “EMBODIMENT 3” beginning at col. 11, line 1 --especially col. 13, lines 5-15).

Regarding claim 2, the common electrodes **33** include a first common electrode formed in parallel with the data line **39** and diverged from the common line **32** within the pixel region;

a second common electrode **33** formed with at least one data electrode **40** interposed between the first common electrode **33** and the second common electrode **33** in parallel with the first common electrode **33** and diverged from the common line **32**; and

a third common electrode **33** formed with at least one data electrode **40** interposed between the second common electrode **33** and the third common electrode **33**, having one end connected with one end of the second common electrode (i.e. by the common line **32**).

Regarding claim 3, the data electrodes **70** include a first data electrode having one side connected with the thin film transistor **68** and the other side extended to an upper portion of the common line **62**, and a second data electrode **70** formed between the second common electrode **63** and the third common electrode **63** and connected with the first data electrode **70** at the upper portion of the common line and with the one side of the first data electrode (Fig. 4).

Regarding claim 5, the data electrode **40** overlapped with the common line **32** has edge portions selectively located inside and outside the common line.

Regarding claim 6, the inside and outside locations of the edge portions depend on a rubbing direction **49** (col. 7, lines 13-61).

Regarding claim 8, the data electrodes **40** have one side connected with the thin film transistors **38** and the other side overlapped with the common line **32**.

Regarding claim 10, **Nakajima** discloses an in-plane switching liquid crystal display device, comprising:

- a plurality of parallel data lines **69** (Fig. 4);

- a plurality of gate lines **61**, crossing the data lines **69**, such that a pixel region is defined by the data and gate lines;

- a thin film transistor **68** comprising source, drain and gate electrodes formed at a crossing point of the data and gate lines;

- a common line **62** within the pixel region;

- a plurality of common electrodes **63** extending in a direction perpendicular to the common line **62**;

- a plurality of data electrodes **70** parallel to the common electrodes **63**, first ends of the data electrodes connected to the drain of said thin film transistor **68**, the data electrodes **70** and the common electrodes **63** forming an alternating pattern; and

- a transverse data electrode **70** overlying the common line **62** and connecting second ends of the data electrodes **70**, the transverse data electrode **70** having a first portion having a first width and a second portion having a second width, wherein the first width is less than the second width; wherein the first width is sufficiently narrow that disinclination is removed.

(Disinclination is necessarily removed because Nakajima teaches that the liquid crystal functions properly everywhere at col. 3, lines 58-62 and col. 7, lines 13-61.)

12. Claims 1, 2, 5, 6, 8, and 10-12 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6,341,003 B1 (**Ashizawa et al.**).

Ashizawa discloses an in-plane switching mode LCD device comprising:

- first and second substrates (**SUB1**, **SUB2**, Fig. 2);
- gate lines **GL** (called “source line” in Nakajima) and data lines **DL** defining a pixel region on the first substrate (Figs. 16, 18, 19, 21, 22);
- a plurality of common **CT** and data electrodes **PX** (called “pixel electrodes” in **Ashizawa**) formed to cross one another within the pixel region at constant intervals;
- a common line **CL** formed in parallel with the gate line **GL**, the common electrodes **CT** being diverged from the common line **CL**;
- a thin film transistor **TFT** formed in a crossing portion of the gate and data lines; and
- a liquid crystal layer (**LC**, Fig. 2) formed between the first and second substrates,

wherein the data electrodes **PX** are connected with the thin film transistor at one side and the data electrodes overlap the common line at a minimum area so as not to affect electric field generated between the common electrodes and the data electrodes (col. 4, lines 18-29; col. 21, line 54 to col. 24, line 22).

Regarding claim 2, the common electrodes **CT** include a first common electrode formed in parallel with the data line **TFT** and diverged from the common line **CL** within the pixel region (Fig. 18);

a second common electrode **CT** formed with at least one data electrode **PX** interposed between the first common electrode **CT** and the second common electrode **CT** in parallel with the first common electrode **CT** and diverged from the common line **CL** (Fig. 18); and

a third common electrode **CT** formed with at least one data electrode **PX** interposed between the second common electrode **CT** and the third common electrode **CT**, having one end connected with one end of the second common electrode (i.e. by the common line **CL**) (Figs. 18).

Regarding claim 5, the data electrode **PX** overlapped with the common line **CL** has edge portions selectively located inside and outside the common line (Figs. 16, 18, 19, 21, 22).

Regarding claim 6, the inside and outside locations of the edge portions depend on a rubbing direction (col. 4, lines 18-29; col. 21, line 54 to col. 24, line 22; Figs. 16, 18, 19, 21, 22).

Regarding claim 8, the data electrodes **PX** have one side connected with the thin film transistor **TFT** and the other side overlapped with the common line **CL**.

Regarding claim 10, **Ashizawa** discloses an in-plane switching liquid crystal display device, comprising:

a plurality of parallel data lines **DL** (Fig. 32);

a plurality of gate lines **GL**, crossing the data lines **DL**, such that a pixel region is defined by the data and gate lines;

a thin film transistor **TFT** comprising source, drain and gate electrodes formed at a crossing point of the data and gate lines;

a common line **CL** within the pixel region;

a plurality of common electrodes **CT** extending in a direction perpendicular to the common line **CL**;

a plurality of data electrodes **PX** parallel to the common electrodes **CT**, first ends of the data electrodes connected to the drain of said thin film transistor **TFT**, the data electrodes **PX** and the common electrodes **CT** forming an alternating pattern; and

a transverse data electrode **Cstg** overlying the common line **CL** and connecting second ends of the data electrodes **PX**, the transverse data electrode **Cstg** having a first portion having a first width and a second portion having a second width, wherein the first width is less than the second width; wherein the first width is sufficiently narrow that disinclination is removed.

(Disinclination is necessarily removed because Ashizawa teaches that the common and data electrodes are fashioned to prevent alignment problems due to the rubbing (alignment) direction of the liquid crystals, which Applicant's indicate is the problem leading to disinclination. See col. 4, lines 18-29; col. 21, line 54 to col. 24, line 22; Figs. 16, 18, 19, 21, 22.)

Regarding claim 11, the first ends of the common electrodes **CT** intersect the common line **CL** wherein at least one corner portion of a vertex of the intersection of the common electrodes **CT** and the common line **CL** is rounded (Fig. 38(A)); and

wherein at least one corner portion of a vertex of a connecting point of the second ends of the data electrodes **PX** and the transverse data electrode is substantially rounded (Fig. 38(A)).

Regarding claim 12, the first portion of the transverse data electrode (not labeled, but shown as the connecting portion of the data electrodes **PX** overlying the common line **CL**; Fig. 18) corresponds to the at least one corner portion of the vertex of the intersection of the common electrodes **CT** and the common line **CL**.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Nakajima** in view of either of Applicant's admitted prior art (**APA**).

Regarding claim 11, as noted above, **Nakajima** discloses each of the features of claim 10 and additionally, that first ends of the common electrodes **62** intersect the common line **62** and that the data electrodes **70** have an intersecting point with the transverse electrode **70** (Fig. 4). But **Nakajima** does not indicate (1) that at least one corner portion of a vertex of the intersection of the common electrodes and the common line is rounded; and (2) that at least one corner portion of a vertex of a connecting point of the second ends of the data electrodes and the transverse data electrode is substantially rounded. In short, **Nakajima** does not indicate that the corners formed at the intersection points of the electrodes with the lines are rounded.

APA in paragraph [19] states that such corners are inherently rounded. It would have been obvious for one of ordinary skill in the art, at the time of the invention to form the corners of **Nakajima** to be rounded, because **APA** states that this occurs as a matter of the manufacturing and that only in "design" are the corners shown to be "right angles."

Regarding claim 12, **Nakajima** discloses that the first portion of the transverse data electrode corresponds to the at least one corner portion of the vertex of the intersection of the

common electrodes and the common line.

Regarding claim 13, **Nakajima** does not disclose that the LCD further comprises a transverse common electrode connected to second ends of the common electrodes, wherein at least one corner portion of a vertex of the intersection of the common electrodes and the transverse common electrode is rounded.

APA prior art Fig. 2C teaches that the transverse common electrode is a common configuration and that it is known to round the corners of the intersection between the electrodes and the transverse electrodes (paragraph [19]).

It would have been obvious for one of ordinary skill in the art, at the time of the invention to apply the features of the **APA** to **Nakajima** to connect the common electrodes ends opposite the common line and to round the corners, because **APA** teaches that this is common in the art.

Regarding claims 14 and 15, **Nakajima** does not disclose that the second ends of the data electrodes **40** (Fig. 3) connect to a second transverse data electrode, the second transverse data electrode having a third portion having a third width and a fourth portion having a fourth width, wherein the third width is less than the fourth width (instant claim 14). **Nakajima** also fails to disclose that the third portion of the second transverse data electrode corresponds to the at least one corner portion of the vertex of the intersection of the common electrodes and the transverse common electrode (instant claim 15).

APA prior art Fig. 2C shows these features.

It would have been obvious for one of ordinary skill in the art, at the time of the invention to apply the features of the **APA** to **Nakajima** to connect the data electrodes ends opposite the first transverse electrode, because **APA** teaches that this is common in the art.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


US 5,694,188 (**Sano** et al.) teaches an LCD device having the corners at the intersection between the electrodes and the lines connecting the electrodes rounded (Fig. 8A).

US 6,545,736 B2 (Ashizawa et al.) is a patent based upon a continuation application of the application leading to the Ashizawa patent applied above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erik Kielin whose telephone number is 703-306-5980. The examiner can normally be reached on 9:00 - 19:30 on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr., can be reached at 703-308-4940. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.


Erik Kielin
April 17, 2003